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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,915	12/07/2005	Jacobus Josephus Maria Ruigrok	NL030681US1	9555
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EXAMINER				
LOUIE, MANDY C				
ART UNIT		PAPER NUMBER		
1792				
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12/09/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/559,915

**Applicant(s)**

RUIGROK ET AL.

**Examiner**

MANDY C. LOUIE

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/22)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 1-8, 10-12 are objected to because of the following informalities:  
"selecting a physical process of a plurality of physical processes" is suggested to be changed to "selecting a physical process from a plurality of physical processes".

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6-8, 10 are rejected under 35 U.S.C. 103(a) as obvious over Fox et al in view of Pelecky [Magnetic properties of nanostructured materials] and Piramanayagam [Role of thermal energy on magnetic properties of laminated antiferromagnetically coupled recording media].

Fox et al anticipates a method of manufacturing a device (as a magnetoresistive device, further as a sensing device) with a magnetic layer-structure. There is formed the magnetic layer-structure, then heating the structure with an electrical current having a duration (shorter than 100 ms) such that the electrical current is a pulse having a

duration such that no substantial heat transfer from the layer-structure outside the pinning areas takes place, so that the temperature of the pinning layers before and after the current pulse is substantially the same. The pulse is used to select a physical process in the laser-structure, the duration and amplitude of the pulse being adapted to the activation energy of the physical process. Increases in the amplitude of the pulse and decreases of the pulse duration are disclosed. (col 3, lines 66 - 67; col 4, lines 1-13; col 11, lines 7-50.

Regarding the recitation of "the environment", such is inherent to Fox et al. As an alternative interpretation, such would have been obvious to one with ordinary skill in the art because Fox teaches not heating any associated structure outside the pinning layers.

However, the prior art appears to be silent in selecting a physical process from a plurality of physical processes having corresponding activation energies. Pelecky and Piramanayagam remedy this.

Pelecky teaches a study on the correlation between magnetic properties and nanostructures [abstract], wherein changes in magnetization of a material occurs via activation over an energy barrier, which each physical mechanism responsible for an energy barrier has an associated length scale for various properties [pg 1771-1772].

Whereas Piramanayagam teaches thermal energy affects the activation energy required to achieve a particular change in magnetic properties [pg 3443-3444].

It would have been obvious to one of ordinary skill in the art in light of the prior art that amount of thermal energy applied to a material would affect at least one or more magnetic properties to various degrees; hence, attention would be paid to such energy in relations to the activation energy in order to control a particular change in magnetic properties. One would have been motivated to do so in order to better understand the changes and control the results.

4. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as obvious over Fox et al in view of WO 00/79298 (WO '298).

Fox et al anticipates a method of manufacturing a device (as a magnetoresistive device, further as a sensing device) with a magnetic layer-structure. There is formed the magnetic layer-structure, then heating the structure with an electrical current having a duration (shorter than 100 ms) such that the electrical current is a pulse having a duration such that no substantial heat transfer from the layer-structure outside the pinning areas takes place, so that the temperature of the pinning layers before and after the current pulse is substantially the same. The pulse is used to select a physical process in the laser-structure, the duration and amplitude of the pulse being adapted to the activation energy of the physical process. Increases in the amplitude of the pulse

and decreases of the pulse duration are disclosed. (col 3, lines 66 - 67; col 4, lines 1-13; col 11, lines 7-50.

Regarding the recitation of "the environment", such is inherent to Fox et al. As an alternative interpretation, such would have been obvious to one with ordinary skill in the art because Fox teaches not heating any associated structure outside the pinning layers.

Regarding recitations of claims 9 and 13 that were indicated as allowable, since WO '298 teaches current change as changing physical processes (page 3, lines 19-23), such would have been obvious to one with ordinary skill in the art to include to Fox et al to obtain the effective result desired.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al as applied to claims above, and further in view of Voegeli et al.

Fox et al does not disclose a sequence of current pulses.

Voegeli et al discloses a sequence of pluses (col 3, lines 51-60; col 7, lines 2-11, 35-58; col 9, lines 34-48).

It would have been obvious to one with ordinary skill in the art to include a sequence of pluses because Voegeli et al teaches that multiple pluses may be required to achieve the desired effect.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al as applied to claims above, and further in view of WO 00/79298 (Kuiper et al.).

Fox et al does not disclose several magnetoresistive devices further in at least four magnetoresistive devices arranged in a Wheatstone bridge configuration.

Kuiper et al discloses multiple devices including a Wheatstone bridge configuration (p 6, lines 33 to p 7, line 33; p 12, lines 12-17).

It would have been obvious to one with ordinary skill in the art to include several magnetoresistive devices further in at least four magnetoresistive devices arranged in a Wheatstone bridge configuration for the purpose of desired configuration requiring functionality.

### ***Response to Arguments***

7. Applicant's arguments filed 09/04/09 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection which was necessitated by "selecting a physical process from a plurality of physical processes having corresponding activation energies." However, it is noted that by providing a current pulse with the intent of

adjusting magnetic properties (i.e. resetting magnetic moments as taught by Fox, col 4, ln 7-13; col 11, ln 36-46) can be considered as "selecting a physical process."

In regards to applicant's argument of claim 9, it is noted that Fox providing different biasing layers [col 12, ln 49-51]; whereas Lenssen teaches inducing a magnetic field over sensor elements (consisting of exchange-based spin valves) to set exchange biasing direction and heated above the blocking temperature of the exchange biasing material [pg 3 ln 20-25]. Moreover, it would have been obvious to one of ordinary skill in the art to select from a finite number of possibilities to set an exchange biasing direction of the biasing layers (i.e. first set the higher blocking temperature or to first set the lower blocking temperature) in absence of criticality, since both layers would be different; hence, would not be affect by the order,

In regards to applicant's argument of claim 13, it is noted that Fox teaches such application of the current is applied for changing a resistance of the magnetoresistive device [col 7, ln 5-10], wherein Lenssen teaches a magnetoresistive bridge device may have changes to resistance due to temperature variance (heating) [pg 2, ln 17-20], wherein the adjustments made the device may be irreversible [abstract].

Hence, the limitations of instant claims are met by the prior art.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See



MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MANDY C. LOUIE whose telephone number is (571)270-5353. The examiner can normally be reached on Monday to Friday, 7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. L./  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit 1792